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How to Find Answers for the Sample Questions

Knowing what questions to ask is the first step. Knowing where to find the answers is the next. Different questions require that the data be examined in different ways. The following discussion examines each of our sample questions and suggests one method to examine the data to answer the question. Often there are multiple ways that the data can be examined to answer each question.

District

1. How does our student performance in reading and math compare with state and national achievement norms?
   ITBS and ITED both have national and state achievement norms. Other assessments, PLAN, EXPLORE, and ACT for example, have national norms. Examine the state and national percentile ranks. On ITBS and ITED be careful because the school data is given two ways: rank on student norms and rank on school norms.

2. Are our mean percentile math and reading achievement scores consistent at the elementary, middle school and high school levels?
   Again the ITBS and ITED percentile ranks will give you this information. CAUTION: it is not good statistical practice to find the mean of percentile ranks because they are not equal interval data. You must average the standard scores and then use a conversion table to find the appropriate percentile rank. EXCEL calculates mean, mode, standard deviation, and range quickly using the "descriptive statistics" function.

3. How does the achievement of our various subgroups (e.g., Special Education, English Language Learners, Low Socioeconomic Status, ethnic minorities, etc.) compare with our district averages in reading and math? Are we serving all students equally?
   Most assessments for which students receive scores can be disaggregated. Excel's "Pivot Table" tool can accomplish this easily.

4. How many schools do we have "in need of assistance" or in danger of being labeled "in need of assistance?"
   All school must test at least 95% of their students enrolled on the beginning day of ITBS/ITED testing.
   The percent of students who have attended for a full academic year (FAY) and score proficient on ITBS/ITED in Reading Comprehension and Math Total must be above the state Annual Measurable Objective (AMO). A 98% one sided confidence interval and safe harbor may also be taken into account.

5. How do our reading and math scores correlate with attendance?
   Again ITBS/ITED scores or another measure such as a criterion referenced test (CRT) may be used. The Excel Data Analysis Tool called "correlation" will calculate the correlations.

6. How do our reading and math scores correlate with discipline referrals?
   See #5.

7. How many of our students are proficient in reading? Math?
   First you must determine what is meant by proficient. For the NCLB legislation proficient is defined as scoring above the 40th percentile on the ITBS or ITED using the 2000 norms on the Reading Comprehension and Mathematics Total scores.
   Excel "IF" statements can help answer this question.

8. How many of our students are "marginally" proficient (e.g., scoring between the 41st and 50th percentile in reading and math on the ITBS/ITED?)
   See #7. An EXCEL scatter plot can also help to visualize just where your students are scoring.

School

[Schools will ask many of the same questions of their school data that the district asks about all their students. In addition, schools have other questions that are specific to their sites.]

9. What areas of reading/math are most difficult for our students? (E.g., item analyses of ITBS/ITED data will reveal scores for sub-categories of reading such as "decoding", "using context clues", "determining main ideas", etc.)? What are the strongest skill areas for our students in reading and math? What are the weakest areas?
   Again examination of ITBS and ITED as well as multiple measures will help make the picture clear. You may want to look at the Group Item Analysis, Class Skill Performance Profile, and/or Class Item Response

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Record. The Group Item Analysis has a visual graph that allows you to quickly note what skills or items your students struggled with compared with either the state or nation. Caution: the ITBS/ITED has very few items in some of the skill areas so interpretations must be made very carefully.

10. Do we have overlap among our sub-groups? (For example, how many of our special education students receive free/reduced lunch? How many of our low SES students belong to ethnic minorities? Etc.)
    This is demographic information. The EXCEL pivot table can help you organize your data.

11. As a sub-group, our Special Education students scored 20 percentile points lower on the reading portion of the ITBS than the rest of our student population. When we look at the distribution of reading scores for students in special education, are there clusters of high and low achievement by type of disability?
    EXCEL can help you compute frequency distributions for each disability type.

12. What are the reading scores of students who have dropped out of school this year?
    "Students who have dropped out" is binomial data, that is, either that student stayed in school (value =1) or dropped out (value = 0). Better question might be: how does the distribution of reading scores for students who dropped out compare to those that stayed in school? ITBS/ITED or another measure could be appropriate. Again, EXCEL can help you compute frequency distributions.

13. What is the correlation of reading scores with students who have been referred to the office for discipline problems this year?
    What you would probably correlate is the score on the assessment with the number of office referrals. EXCEL correlation can then calculate the appropriate statistic.

14. How much independent reading do our students do? At school? At home?
    A survey will be needed, but who is it best to ask? Students or parents? After you accumulate the data you may want to calculate descriptive statistics and frequency tables utilizing EXCEL.

15. What supports for struggling students are present in our school, neighborhood, and community? Do we know how effective they are?
    Different data collection strategies might be appropriate here to measure implementation and student data. The study design could vary dependent upon the support and whether or not "level" of support is to be measured. An ANOVA or regression might be the answer. EXCEL can do both of these functions.

16. Why are our students referred to the office? What are the most common forms of student misbehavior in our school?
    Frequency distributions could help answer this question. The answers may differ by classroom and/or grade level as well as by other subgroups.

Department/Grade Level(s)

17. What specific comprehension tasks account for the 4th and 5th grade decline in overall comprehension scores on the ITBS?
    See question #9.

18. How many of the 9th grade students reading below the 40th percentile on ITED are earning D's or F's in English I?
    Construct a frequency table using all grades earned in English I using the students who scored below the 41st percentile.

19. When we examine the item analysis data for math on the ITBS/ITED, are the weaknesses discovered in problem solving consistent across all the grades?
    See question #9.

20. How many of our students failed Algebra I? How many failed English I?
    Construct a frequency table using all grades earned in Algebra 1 and/or English I. Note the median grade.